

-- REMARKS --

The present amendment replies to a Final Office Action dated July 26, 2006. Claims 1-22 are pending in the present application. In the Final Office Action, the Examiner rejected pending claims 1-22 on various grounds. Claim 14 is amended herein. The Applicant respond to each ground of rejection as subsequently recited herein and respectfully request reconsideration of the present application.

Typographical Error

Claim 14 has been amended herein to correct a typographical error and not to avoid any cited reference.

35 U.S.C. §102

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Thus, to warrant the §102(e) rejection, the references cited by the Examiner must show each and every limitation of the claims in complete detail. The Applicant respectfully assert that the cited reference fails to do so.

- A. Claims 1-7, 9-13, 15-20, and 22 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Pub. No. 20030060170 to Tikka, *et al.* (the *Tikka* application).

The Applicant respectfully asserts that the *Tikka* application fails to teach or suggest all the claim limitations. The *Tikka* application fails to disclose, teach, or suggest:

a duplexer comprising:

an input/output line;

a transmit segment connected to the input/output line; and,

a receive segment, the receive segment including:

a balun including: a first output, a second output, a first transmission line coupled between the input/output line and the first output, and a second transmission line coupled between the input/output line and the second output, and

a differential filter connected to the first output and the second output, the differential filter including resonator elements connected so that at transmit band frequencies of the duplexer, the first output and the second output are shorted, as recited in independent claim 1;

a method for providing filtering within a duplexer, the method comprising the following steps:

(a) for signals at the transmit band frequencies, performing the following substeps: (a.1) providing passband transmission through a single-ended filter of the duplexer, and (a.2) providing a short circuit at a first input and second input of a differential filter, the first input of the differential filter being connected to an input/output line of the duplexer via a balun and the second input of the differential filter being connected to the input/output line of the duplexer via the balun; and,

(b) for signals at the receive band frequencies, performing the following substep:
(b.1) providing passband transmission through the differential filter of the duplexer, as recited in independent claim 11; or

a duplexer comprising:

an input/output line;

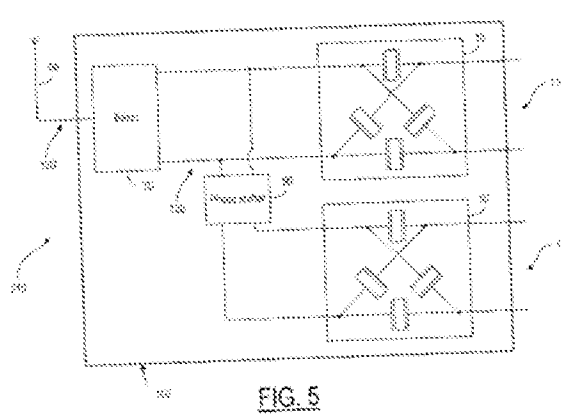
a transmit segment; connected to the input/output line; and,

a receive segment, the receive segment including:

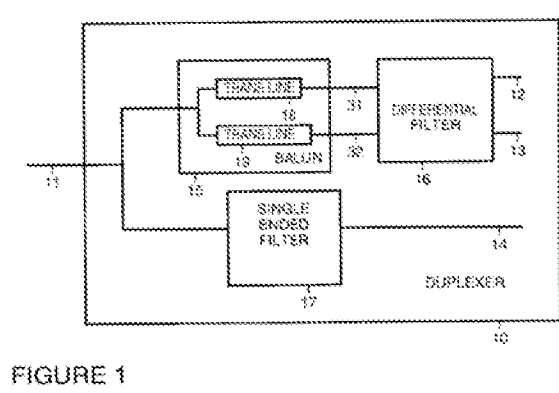
a balun connected to the input/output line, the balun including: a first output, and a second output, and

a differential filter connected to the first output and the second output, the differential filter shorting the first output and the second output at transmit band frequencies of the duplexer, as recited in independent claim 16.

In the Response to Arguments of the Final Office Action dated July 26, 2006, the Examiner asserted for claims 1 and 16 that transceiver 110 is connected to second port 120' to establish a separate transmit segment in the *Tikka* application. The Applicant respectfully disagrees. As seen below for Fig. 5 of the *Tikka* application, the balun 70 is common to the first signal path from the transceiver 110 to the second port 120' and the second signal path from transceiver 130 to the second port 120'. Only the balun 70 is connected to port 120'.



This is in contrast with the Applicant's invention as claimed and as shown in Figure 1 below, in which the balun 15 is part of the receive segment between input/output 11 of the duplexer 10 and the output 12 and output 13 of differential filter 16. The balun 15 is part of the receive segment alone.



Therefore, the *Tikka* application fails to disclose a transmit segment connected to the input/output line as recited in independent claims 1 and 16.

In the Response to Arguments of the Final Office Action dated July 26, 2006, the Examiner asserted for claims 1 and 11 that passband filters 10 and 10' have different passband frequencies in the *Tikka* application, so that passband filter 10 can short signals from the balun 70 preventing output of signals from filter 10 to the transceiver 110. The Applicant respectfully disagrees that this is pertinent to the Applicant's invention as claimed. The Applicant claims the differential filter shorting the first output and the second output at transmit band frequencies of the duplexer. If the differential filters 10 and 10' of the *Tikka* application provide a short circuit, the duplexer 102 will no longer be a duplexer, because it will be unable to transmit a signal. While the *Tikka* application contemplates at paragraph [0038] a filtering system that only receives signals, this would not be the duplexer of the Applicant's invention which must both transmit and receive signals.

Regarding claim 11, the Applicant respectfully notes that the *Tikka* application fails to disclose a single-ended filter as claimed. All the filters of the *Tikka* application are differential filters. *See* Figures 2-6. Further, the *Tikka* application teaches away from a single-ended filter and stresses the better electrical performance of a balanced filter over a single-ended filter.

Claims 2-7 and 9-10; claims 12-13 and 15; and claims 17-20 and 22 depend directly or indirectly from independent claims 1, 11, and 16, respectively, and so include all the elements and limitations of their respective independent claims. The Applicant therefore respectfully submits that the dependent claims are allowable over the *Tikka* application for at least the same reasons as set forth above with respect to their respective independent claims.

Withdrawal of the rejection of claims 1-7, 9-13, 15-20, and 22 under 35 U.S.C. §102(e) as being anticipated by the *Tikka* application is respectfully requested.

35 U.S.C. §103

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. *See* MPEP 2143. To establish *prima facie* obviousness of a claimed invention, all the claim

limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). *See* MPEP 2143.03. The Applicant respectfully assert that the cited references fail to teach or suggest all the claim limitations.

- B.** Claims 8, 14, and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over the *Tikka* application in view of U.S. Patent No. 5,818,385 to Bartholomew (the *Bartholomew* patent).

The Applicant respectfully asserts that the *Tikka* application and the *Bartholomew* patent, alone or in combination, fail to teach or suggest all the claim limitations. As discussed in Section A above, the *Tikka* application fail to disclose, teach, or suggest:

a duplexer comprising:

an input/output line;

a transmit segment connected to the input/output line; and,

a receive segment, the receive segment including:

a balun including: a first output, a second output, a first transmission line coupled between the input/output line and the first output, and a second transmission line coupled between the input/output line and the second output, and

a differential filter connected to the first output and the second output, the differential filter including resonator elements connected so that at transmit band frequencies of the duplexer, the first output and the second output are shorted, as recited in independent claim 1;

a method for providing filtering within a duplexer, the method comprising the following steps:

(a) for signals at the transmit band frequencies, performing the following substeps: (a.1) providing passband transmission through a single-ended filter of the duplexer, and (a.2) providing a short circuit at a first input and second input of a differential filter, the first input of the differential filter being connected to an input/output line of the duplexer via a balun and the second input of the differential filter being connected to the input/output line of the duplexer via the balun; and,

(b) for signals at the receive band frequencies, performing the following substep: (b.1) providing passband transmission through the differential filter of the duplexer, as recited in independent claim 11; or

a duplexer comprising:

an input/output line;

a transmit segment; connected to the input/output line; and,

a receive segment, the receive segment including:

a balun connected to the input/output line, the balun including: a first output, and a second output, and

a differential filter connected to the first output and the second output, the differential filter shorting the first output and the second output at transmit band frequencies of the duplexer, as recited in independent claim 16.

The *Bartholomew* patent also fails to disclose these elements. Claims 8, 14, and 21 depend directly from independent claims 1, 11, and 16, respectively, and so include all the elements and limitations of their respective independent claims. The Applicant therefore respectfully submit that dependent claims 8, 14, and 21 are allowable over the *Tikka* application in light of the *Bartholomew* patent for at least the same reasons as set forth above with respect to their respective independent claims.

Withdrawal of the rejection of claims 8, 14, and 21 under 35 U.S.C. §103(a) as being unpatentable over the *Tikka* application in view of the *Bartholomew* patent is respectfully requested.

SUMMARY

Reconsideration of 1-22 is respectfully requested in light of the remarks herein. The Applicant submit that claims 1-22 fully satisfy the requirements of 35 U.S.C. §§102, 103, and 112. In view of foregoing remarks, favorable consideration and early passage to issue of the present application are respectfully requested.

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Respectfully submitted,

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